

FT Patents

16/5,K/2 (Item 2 from file: 348)  
DIALOG(R)File 348:EUROPEAN PATENTS  
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00443509

**METHOD AND APPARATUS FOR COMPARATIVE ANALYSIS OF VIDEOFLUOROSCOPIC JOINT MOTION**

**PATENT ASSIGNEE:**

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EP 447459 B1 970129  
WO 9006084 900614

APPLICATION (CC, No, Date): EP 90900674 891127; WO 89US5324 891127

PRIORITY (CC, No, Date): US 280566 881206

DESIGNATED STATES: DE; FR; GB; NL

INTERNATIONAL PATENT CLASS: A61B-005/11 ; A61B-006/04 ; H04N-005/32; H05G-001/60

CITED PATENTS (EP A): US 4709332 A

CITED PATENTS (WO A): US 4616319 A; JP 53145492 A; JP 53145492 A; US 2824970 A; US 4532546 A; US 4245244 A; US 2552592 A

**CITED REFERENCES (EP A):**

OPTICAL ENGINEERING. vol. 25, no. 6, June 1986, BELLINGHAM US pages 791 - 798; G.S.NUSHOLTZ ET AL.: 'PHOTOGRAMMETRIC TECHNIQUES USING HIGH SPEED CINERADIOGRAPHY' PATENT ABSTRACTS OF JAPAN vol. 9, no. 140 (E-321)(1863) 14 June 1985 & JP-A-60 021 687 ( HAMAMATSU HOTONIKUSU K.K. ) 4 February 1985;

**CITED REFERENCES (WO A):**

X-Cellent X-Ray Company sales brochure for C-8605 Vertical TV Imaging System, see the entire document.

**IDEM**

Fundamentals of Radiology, Harvard University Press, 1975, Squire, LUCY FRANK, see pages 290, 296, 298.

ICA International Review of Chiropractic, Fall 1985, SOLOMON J. HERBERT, "Computer Graphics Research in Chiropractic Comes of Age", see pages 25-27.;

NOTE: No A-document published by EPO

**LEGAL STATUS (Type, Pub Date, Kind, Text):**

Change: 021009 B1 Legal representative(s) changed 20020820  
Application: 910925 A1 Published application (A1with Search Report ;A2without Search Report)  
Lapse: 030212 B1 Date of lapse of European Patent in a contracting state (Country, date): DE 19970430, FR 19970627, NL 19970129,  
Examination: 910925 A1 Date of filing of request for examination: 910531  
Search Report: 920122 A1 Drawing up of a supplementary European search report: 911204  
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Lapse: 971029 B1 Date of lapse of the European patent in a  
Contracting State: DE 970430, FR 970627  
Oppn: 971217 B1 Opposition 01/971027 Philips Electronics N.V.;  
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LANGUAGE (Publication,Procedural,Application): English; English; English

...SPECIFICATION record of the exam could be analyzed at a later date and  
replayed as many **times** as necessary at a variety of speeds. The widespread  
availability of video recording systems in...

...information that dynamic studies provide.

Interest in fluoroscopy has been replaced by interest in computerized  
**imaging** techniques. In the 1970s, **computed tomography (CT) scanners**  
demanded the radiologists' attention, followed by the development of nuclear  
**magnetic resonance (NMR)** systems. A new method of skeletal analysis also  
developed in the 1970s: computer modeling...

...the spine is studied through mathematical analysis, often including model  
projections, some of which are **three - dimensional**. The 1980s have seen a  
return to interest in fluoroscopy studies.

However, the focus of...

...computer program or several angles of the subject can be fluoroscoped and  
superimposed to generate **three - dimensional** information.

Preferably reference point R would be a point on bone 201 which could  
be...point may be used. For example, the relative angular movement of the  
points may be **measured**; the specific **shapes** of the path of movement of  
the points may be individually or collectively compared or...

...a reference, to another point or to a previous measurement in both two-  
dimensional and **three - dimensional** configurations; various reference  
points could be selected and the monitoring points could be compared  
with...be the same; the exam is therefore reliable and repeatable, even when  
performed at different **times** and by different examiners. Since part of this  
system involves computer analysis of spinal motion...

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00980185 \*\*Image available\*\*

**JOINT ANALYSIS USING ULTRASOUND**  
**ANALYSE D'ARTICULATIONS PAR ULTRASONS**

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Patent and Priority Information (Country, Number, Date):  
Patent: WO 200309762 A1 20030206 (WO 0309762)  
Application: WO 2001IL763 20010816 (PCT/WO IL0100763)  
Priority Application: WO 2001IL683 20010724  
Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU  
CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP  
KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD  
SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW  
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR  
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG  
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW  
(EA) AM AZ BY KG KZ MD RU TJ TM  
Main International Patent Class: A61B-008/08  
Publication Language: English  
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Date*

#### English Abstract

A method is provided for generating at least one **quantitative measure** of a joint comprising sending an acoustic signal to at least a part of a joint, receiving said acoustic signal after modification by said joint, analyzing the received acoustic signal with a computer, and generating, from said computer, one or more of a **quantitative surface**, **quantitative volumetric** and **quantitative measurements** of the physical properties of the joint or a portion thereof.

Legal Status (Type, Date, Text)

Publication 20030206 A1 With international search report.

#### Detailed Description

... measurement tool. As early as 1983, ultrasound was suggested as a means of observing joint **cartilage**. As an example, Alex M...

#### OVERVIEW OF JOINT STRUCTURES

Joints are connections, typically movable, between two or more bones and include many structures that lend themselves to **quantitative measurement**. Such structures include, but are not limited to **cartilage**, chondrocytes, subchondral bone, joint capsule, joint fluid, ligaments and tendons.

#### ...SUMMARY OF THE INVENTION

An aspect of some embodiments of the invention relates to acquiring **quantitative measures** of joint properties, in particular, surface, physical and volumetric **measures**.

As used herein the term **quantitative surface measure** means a value that characterizes a property of a two dimensional surface measurement of at...

As of a joint structure, such as **cartilage**. An exemplary volumetric **measure** is the **volume** of an **area** of joint **cartilage** that has been affected by thinning and/or pitting due to osteoarthritis. Being **quantitative**, rather than qualitative, such **measures** can be used, for example, to indicate a joint state directly, for example, in quantifying the quality of **cartilage**. In some exemplary embodiments of the invention, measures are generated on the basis of average...

...basis of absolute measurements of a joint.

In an exemplary embodiment of the present invention, **quantitative** ultrasound joint **measurements** are acquired during performance of different activities, for example during walking or running.

In an exemplary embodiment of the present invention, **quantitative** ultrasound joint **measures** are compiled into a database that associates a qualitative meaning or a state identification with...

...joint properties of two or more regions of a joint structure. In one example, a **quantitative comparison** is made between the degree of pitting in two or more regions of **cartilage**. An exemplary use of such quantitative information is in locating optimal **cartilage** graft donor sites and optimal **cartilage** graft recipient sites in autogenous **cartilage** reconstruction.

An aspect of some embodiments of the invention is **correlation** of **quantitative** ultrasound joint **measures** with disease states.

Osteoarthritis, for example, is a disease that results from overuse and/or...

#### INTRODUCTION TO JOINT **IMAGING QUANTITATIVE MEASUREMENTS**

An ultrasound **measurement** of a joint 100 uses a probe 134 that both emits and receives an ultrasound...of tissue. In an exemplary embodiment of the invention, probe 134 is used in the **imaging** method to construct and image or an image is reconstructed from multiple measurements (e.g., for one-, two- or **three - dimensional imaging**). Alternatively or additionally, a one dimensional or two dimensional phased array or ...

...of lines determined by the tissue's thickness on the ultrasound image. Based upon the **quantitative measurement** requirements, fewer or more lines of pixels can be defined and averaged. For instance, as...planar elevation. Alternatively, pixels may encircle a specific lesion, such as an area of focal **cartilage** thinning in osteoarthritis, with parallel pixel encirclement lines placed at regularly increasing or decreasing mean radii to provide a **3D** surface map of an area...

#### FURTHER **QUANTITATIVE MEASUREMENTS OF CARTILAGE**

In examination of **cartilage** 404, bones, 402 and 408 are flexed at approximately 100 degrees to give a relatively unobstructed examination of **cartilage** 404. The obtained ultrasound images are processed to give the measures mentioned above.

Alternatively ...be placed in the fully extended position.

#### **CUBIC VOLUME CARTILAGE DEFECT MEASUREMENT**

In an exemplary embodiment of the present invention, the square area of pits (PA) in each sector and the Average **Cartilage** Pit Depth (CPD) are used to give the Cubic Volume of Pitting (CPV) in each...row 524 is .682 cubic millimeters and CPV of row 526 is .65 cubic millimeters.

#### **QUANTITATIVE VALUE FOR CARTILAGE VOLUME MEASUREMENTS**

Total Cubic **Cartilage** volume (TCV) comprises the **cartilage** area, which in this example is 1 00 millimeters, multiplied by the **Cartilage** Thickness (CT) in millimeters...

...or in a printed readout of information where, for example, the data is organized into **three dimensional** model of said joint.

...acquired. Such new values are then, for example, used in the analysis of all further **quantitative measures** in the database.

...eversion, on weight bearing, off weight bearing.

In an exemplary embodiment of the present invention, **quantitative** ultrasound joint **measurements** are acquired during and/or following regimens such as walking, running and/or aerobic exercise...way of example, the database includes quantitative data on treatment regimen in joint inflammation, healing **time**, and/or treatment sequella of athletes. The database correlates a treatment regimen such as local...

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00964088

**METHODS TO DIAGNOSE TREAT AND PREVENT BONE LOSS**

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Patent and Priority Information (Country, Number, Date):

Patent: WO 200296284 A1 20021205 (WO 0296284)

Application: WO 2002US17024 20020528 (PCT/WO US0217024)

Priority Application: US 2001293898 20010525; US 2001293489 20010525

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Designated States: AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CU CZ DE DK

EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR

LS LT LU LV MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK

SL TJ TM TR TT UA UG US UZ VN YU ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW

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Filing Language: English

**English Abstract**

Methods of diagnosing and preventing bone loss and/or enhancing bone formation are disclosed. The invention additionally provides methods of diagnosing a predisposition to bone loss. The methods mathematically combine the information provided by **imaging** tests with the information

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Date*

provided by biomarkers to provide an index value. The index value is used for diagnosis of bone diseases, and to assess the progress of treatment of bone diseases.

Legal Status (Type, Date, Text)

Publication 20021205 A1 With international search report.

Examination 20030320 Request for preliminary examination prior to end of 19th month from priority date

#### Detailed Description

... various x-ray based techniques including single and dual-photon absorptiometry (SPA and DPA), quantitative **computed tomography** (QCT), and dualenergy absorptiometry (DXA). **Imaging** tests such as x-rays, ultrasound, **computed tomography** and **MRI** can provide detailed information about the morphological condition of an organ or a tissue and on the severity or the stage of a disease process.

...absorptiometry, and radiographic absorptiometry; ultrasound including broadband ultrasound attenuation measurement and speed of sound measurements; **computed tomography**; nuclear scintigraphy; SPECT; positron emission tomography and **MRI**. One or more of these **imaging** tests may be used in the methods described herein, for example in order to obtain tissues such as bone including bone mineral density and curvature of the subchondral bone, **cartilage** including biochemical composition of **cartilage**, **cartilage** thickness, **cartilage** volume, **cartilage** curvature, marrow including marrow composition, synovium including synovial inflammation, lean and fatty tissue, and thickness...

...on the two-dimensional arrangement of individual components forming said structure or information on the **three - dimensional** arrangement of individual components forming said structure. In any of the methods described herein trabecular thickness, trabecular spacing and/or estimates of the two- or **three - dimensional** architecture of the trabecular network. Further, in any of the methods described herein, quantitative information...of an anatomic structure or morphology of an anatomic structure are used to obtain the **imaging** descriptors...

Alternatively, or in addition to, **imaging** techniques, measurements and/or samples can be taken of bone or other tissue intraoperatively during...luteal, or postmenopausal), progesterone (follicular, mid-cycle, luteal, mid-luteal, oral contraceptive, or over 60 **years**), alkaline phosphatase, percent liver-ALP, and total intestinal-ALP. Typically, after **measuring** the **amount** of one or more of these biomarkers, a diagnosing clinician compares the measurements to a...205,643 reports that the degradation of type III collagen in the body can be **quantitatively** determined by **measuring** the concentration of an N-terminal telopeptide from type III collagen in a body fluid hydroxypyridinium cross-linked can alternatively be **quantitated** by fluorometric **measurement** of a body fluid containing the biomarker. The fluorometric assay can be conducted directly on...and telopeptide, by monoclonal or polyclonal antibodies or specific receptor proteins.

In another aspect, one or more of the selected biomarkers and one or more of the selected **imaging** descriptors can be measured over a period of **time** and the relationship between the two can then be statistically analyzed. The **time** period can be seconds, minutes, hours, **days**, or **months** or any **interval** therebetween. The biochemical and morphological data can be, for

example, obtained at 0, I @ 2...

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00940482 \*\*Image available\*\*

**JOINT IMAGING SYSTEM UTILIZING MAGNETIC RESONANCE IMAGING AND  
ASSOCIATED METHODS**

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*Bad  
Date*

Patent and Priority Information (Country, Number, Date):

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Application: WO 2001US22914 20010719 (PCT/WO US0122914)

Priority Application: US 2001809383 20010315

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KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD

SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG

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Main International Patent Class: A61B-005/055

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Filing Language: English

**English Abstract**

A **magnetic resonance imaging** system (10) and method for **imaging**  
joint regions are disclosed which utilize blood pool contrast agents and  
particular **magnetic resonance imaging** parameters, including  
fat-suppression, to obtain medically useful images of joints. In  
particular, the methods and apparatus provide medical personnel with  
accurate and detailed joint images, including joint spaces, which are  
useful for various therapeutic and diagnostic applications.

Legal Status (Type, Date, Text)

Publication 20020926 A1 With international search report.

Examination 20030206 Request for preliminary examination prior to end of  
19th month from priority date

**Detailed Description**

**FIELD OF THE INVENTION**

[0002] The present invention relates generally to the field of **imaging**  
and, more particularly, to the utilization of **magnetic resonance imaging**  
to image joint spaces.

...the art. Generally, prior art techniques utilize computed axial tomographic X-rays, also known as **CT scanning**, or **magnetic resonance imaging (MRI)** to afford an internal view of particular regions in subjects undergoing **imaging** procedures. These prior art techniques may be adequate for image construction of tissue matter such...

...of useful tissue selective images of joint spaces has presented some difficulty. This difficulty in **imaging** is due to the fact that joint regions are comprised of multiple components including, for example, blood, joint fluids, muscles, tendons, **cartilage**, fat, bone and the marrow incorporated within the bone. As a result, for effectively every type of **magnetic resonance** pulse **imaging** sequence, various component tissues, singly or in combination, result in bright signals in the resultant image. Consequently, prior art methodologies of **imaging**, in two and **three - dimensions**, of joint spaces utilizing **MRI** can be improved upon, wherein particular protocols, herein disclosed, are employed comprising particular pulse sequences...

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00888337 \*\*Image available\*\*

#### ASSESSING THE CONDITION OF A JOINT AND DEVISING TREATMENT

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Patent and Priority Information (Country, Number, Date):

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KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PH PL PT RO RU

SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG

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#### English Abstract

Methods are disclosed for assessing the condition of a cartilage in a joint, particularly a human knee. The methods include converting an image such as an MRI to a three dimensional map of the cartilage. The cartilage map can be correlated to a movement pattern of the joint to assess the affect of movement on cartilage wear. Changes in the thickness of cartilage over time can be determined so that therapies can be provided. Information on thickness of cartilage and curvature of cartilage or subchondral bone can be used to plan therapy. Information on movement pattern can be used to plan therapy.

#### Legal Status (Type, Date, Text)

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Publication 20020321 A1 Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

Examination 20021114 Request for preliminary examination prior to end of 19th month from priority date

#### Detailed Description

... 17 shows the error in tibial orientation estimate for the rigid body model and the **interval** deformation correction technique.

Figure I SA - I SI show functional joint **imaging** .

Figure 19 shows the superimposition of the tibiofemoral contact line onto the **3D cartilage** thickness map...

#### SPECIFIC DESCRIPTION

Overview

Figure 1...

...such an assessment. The assessment can be done using internal images, or maps, of the **cartilage** alone or in combination with a movement pattern of the joint. If used alone, a map obtained at an initial **time** is compared with a map obtained at a later **time** to provide a view of the change in **cartilage** over **time** . Another aspect is a method is comparing the movement pattern for a joint of a subject being studied with the **cartilage** degeneration pattern of the subject, then determining the relationship between the movement pattern and...

...prescriptions.

Thus, this invention discloses, for example, a method to examine the relationship between articular **cartilage** morphology and the functional load bearing **areas** of a knee joint **measured** during movement. The method includes enhanced **imaging** techniques to reconstruct the volumetric and biochemical parameters of the articular **cartilage** in **three dimensions** ; and a method for in vivo kinematic measurements of the knee. The kinematic measurement permits...

#### **Cartilage** thickness maps

**Cartilage** thickness can be determined by several methods. One example is detecting the locations of the bone - **cartilage** and the **cartilage** - joint

fluid interface along the surface normal using the same edge detector described below, and subtracting them...

#### Display of Biochemical Information

Once a map is obtained, it can be used in assessing the condition of a **cartilage** at an initial **time** and over a **time** period. Thus, the biochemical map may be used in the method aspects of the invention in a manner similar to the **cartilage** thickness map.

For example, one aspect is a method of estimating the loss of **cartilage** in a joint.

The method comprises

- (a) obtaining a relaxation **time** or biochemical map of the **cartilage** at an initial **time** and analyzing the relaxation **time** or biochemical content of a region thought to contain degenerated **cartilage** so mapped at the initial **time** ,
- (b) obtaining a relaxation **time** or biochemical map of the **cartilage** at a later **time** , and **time** analyzing the relaxation **time** or biochemical content of the region thought to contain degenerated **cartilage** so mapped at the later **time** , and
- (c) determining the change in relaxation **time** or biochemical content of the **cartilage** between the later and initial **times** ...

It may be estimated from measurements of **cartilage** of other subjects having similar characteristics such as gender, age, body type, height, weight, and other factors. It may be estimated from measurements of a similar 'normal' **cartilage** from another corresponding joint (e.g., if the right knee has the defect, measure the normal left knee). It may have been measured at an initial **time** T, when the **cartilage** was normal to provide a baseline. Other means of determining the normal content may be ...By determining the change of content at an initial T, and again at a later **time** T2, one can determine the change in biochemical content over **time** ...

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00888336 \*\*Image available\*\*

#### ASSESSING CONDITION OF A JOINT AND CARTILAGE LOSS

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CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP  
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Date

SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Main International Patent Class: A61B-005/055

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Publication Language: English

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#### English Abstract

Methods are disclosed for assessing the condition of a cartilage in a joint and assessing cartilage loss, particularly in a human knee. The methods include converting an image such as an MRI to a three dimensional map of the cartilage. The cartilage map can be correlated to a movement pattern of the joint to assess the affect of movement on cartilage wear. Changes in the thickness of cartilage over time can be determined so that therapies can be provided. The amount of cartilage tissue that has been lost, for example as a result of arthritis, can be estimated.

#### Legal Status (Type, Date, Text)

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#### Detailed Description

##### SUMNLARY OF THE INVENTION

...with the human knee. Some aspects related the static images and degeneration patterns of a **cartilage**, while others relate to the interaction of such images and patterns to provide a better means of assessing the condition of a **cartilage**.

One aspect of this invention is a method for assessing the condition of a **cartilage**. The method comprises obtaining an image of a **cartilage**, (preferably a **magnetic resonance** image), converting the image to a **three - dimensional** degeneration pattern, and evaluating the degree of degeneration in a volume iof interest of the **cartilage**. By performing this method at an initial **time** T, and a later **time** T2, one can determine the change in the volume of interest and evaluate what steps...

...for treatment.

Another aspect of this invention is a method of estimating the loss of **cartilage** in a joint.

The method comprises obtaining a **three - dimensional** map of the **cartilage** at an initial **time** and calculating the thickness or regional volume of a region thought to contain degenerated **cartilage** so mapped at the initial **time**, obtaining a **three - dimensional** map of the **cartilage** at a later **time**, and calculating the thickness or regional volume of the region thought to contain degenerated **cartilage** so mapped at the later **time**, and determining the loss in thickness or regional volume of the **cartilage** between the later and initial **times**. The 3D map may be a thickness map, a biochemical map or a combination.

Another aspect of the invention is a method for assessing the condition of

**cartilage** in a joint of a human, which method comprises electronically transferring an electronically-generated image of a **cartilage** of the joint from a transferring device to a receiving device located distant from the...

16/5,K/40 (Item 40 from file: 349)  
DIALOG(R)File 349:PCT FULLTEXT  
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00729919 \*\*Image available\*\*

**FIBER OPTIC NEEDLE PROBES FOR OPTICAL COHERENCE TOMOGRAPHY IMAGING**

Patent Applicant/Assignee:

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Patent and Priority Information (Country, Number, Date):

Patent: WO 200042906 A2-A3 20000727 (WO 0042906)  
Application: WO 2000US1228 20000119 (PCT/WO US0001228)  
Priority Application: US 99116859 19990122; US 99359574 19990722

Designated States: JP

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

Main International Patent Class: **A61B-005/00**

Publication Language: English

Filing Language: English

**English Abstract**

A fiber optic needle probe for measuring or **imaging** the internal structure of a specimen includes a needle (5) defining a bore, an optical fiber (11) substantially positioned within the bore, and a beam director (6) in optical communication with the optical fiber (11). At least a portion of the wall of the needle (5) is capable of transmitting light. The beam director (6) directs light from the optical fiber (11) to an internal structure being imaged and receives light from the structure through a transparent portion (7) of the wall. An actuating device (30) causes motion of any, or all of, the needle (5), optical fiber (11), and beam director (6) to scan the internal structure of the specimen. The fiber optic needle probe allows **imaging** inside a solid tissue or organ without intraluminal insertion. When used in conjunction with an OCT **imaging** system, the fiber optic needle probe enables tomographic **imaging** of the microstructure of internal organs and tissues which were previously impossible to image in a living subject.

Legal Status (Type, Date, Text)

Publication 20000727 A2 Without international search report and to be republished upon receipt of that report.

Examination 20001123 Request for preliminary examination prior to end of 19th month from priority date

*Bad Date*

Search Rpt 20010111 Late publication of international search report  
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received: 20001127  
Search Rpt 20010111 Late publication of international search report  
Republication 20010301 A3 With international search report.  
Republication 20010301 A3 With amended claims.

#### Detailed Description

FIBER OPTIC NEEDLE PROBES FOR OPTICAL COHERENCE TOMOGRAPHY **IMAGING**  
...fiber optic needle probe is provided with connecting cables for connection  
to a variety of **imaging** systems and/or other actuating means.

The needle may be constructed using a transparent or...core 2 is diffused  
away is controlled by controlling the point of application, temperature, and  
**time** of the heat treatment. This process is substantially equivalent to  
forming a spacer between the...and angular 0 directions. This provides  
measurements or image information on multiple crosssections or volumetric  
**three - dimensional** information. The scan pattern is performed by scanning I  
0 the angle 0 and changing the longitudinal position z incrementally. This is  
an angle priority scan and corresponds to performing **imaging** in a series of  
circular planer cross-sections at different longitudinal positions. If the  
angle 0 is not continuously scanned, but is scanned back and forth, this  
results in a **imaging** a series of sectors of circles at different  
longitudinal positions.

Alternately, in another embodiment of...

...In all of these twodimensional scanning patterns, the optical beam 4 is  
scanned over a **three - dimensional** volume.

These scanning patterns can be used to generate **three - dimensional**  
measurements or images of an internal structure and construct volume  
renderings.

In some embodiments of...

16/5,K/43 (Item 43 from file: 349)  
DIALOG(R)File 349:PCT FULLTEXT  
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00571973 \*\*Image available\*\*

**ASSESSING THE CONDITION OF A JOINT AND PREVENTING DAMAGE**  
**ESTIMATION DE L'ETAT D'UNE ARTICULATION ET PREVENTION DE LESIONS**

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Patent and Priority Information (Country, Number, Date):

Patent: WO 200035346 A2 20000622 (WO 0035346)

*the  
Patent*

Application: WO 99US30265 19991216 (PCT/WO US9930265)

Priority Application: US 98112989 19981216

Designated States: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK  
DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR  
LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ  
TM TR TT TZ UA UG US UZ VN YU ZA ZW GH GM KE LS MW SD SL SZ TZ UG ZW AM  
AZ BY KG KZ MD RU TJ TM AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL  
PT SE BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

Main International Patent Class: A61B-005/11

Publication Language: English

#### English Abstract

Methods are disclosed for assessing the condition of a cartilage in a joint, particularly a human knee. The methods include converting an image such as an MRI to a three dimensional map of the cartilage. The cartilage map is then correlated to a movement pattern of the joint to assess the affect of movement on cartilage wear. Reference markers useful in obtaining internal images of the cartilage and bone and external images of the limbs in a motion are described. The markers aid in correlating the various images. Changes in the thickness of cartilage over time can be determined so that therapies can be provided.

16/TI/1 (Item 1 from file: 348)  
DIALOG(R)File 348:(c) 2003 European Patent Office. All rts. reserv.

Multiplex sensor and method of use  
Multiplexsensor und Anwendungsverfahren  
Capteur multiplex et procede d'utilisation

16/TI/3 (Item 3 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

METHOD AND APPARATUS FOR A MEDICAL IMAGE PROCESSING SYSTEM  
PROCEDE ET APPAREIL POUR UN SYSTEME DE TRAITEMENT D'IMAGES MEDICALES

16/TI/5 (Item 5 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

BONE AGE ASSESSMENT USING ULTRASOUND  
DETERMINATION DE L'AGE OSSEUX AU MOYEN D'ULTRASON

16/TI/6 (Item 6 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

FLUID EXCHANGE SYSTEM FOR CONTROLLED AND LOCALIZED IRRIGATION AND  
ASPIRATION  
SYSTEME D'ECHANGE DE FLUIDE PERMETTANT UNE IRRIGATION ET UNE ASPIRATION  
LOCALISEE ET REGULEE

16/TI/7 (Item 7 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

LIPHOPHILIN COMPLEXES FOR USE IN CANCER DIAGNOSIS AND THERAPY  
COMPLEXES DE LIPOPHILINE A UTILISER DANS LE DIAGNOSTIC ET LE TRAITEMENT DU  
CANCER

16/TI/8 (Item 8 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

METHODS OF DIAGNOSIS OF BLADDER CANCER, COMPOSITIONS AND METHODS OF  
SCREENING FOR MODULATORS OF BLADDER CANCER  
PROCEDE DE DIAGNOSTIC DU CANCER DE LA VESSIE, COMPOSITIONS ET PROCEDES DE  
CRIBLAGE DE MODULATEURS DU CANCER DE LA VESSIE

16/TI/9 (Item 9 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

METHODS FOR DIAGNOSING AND TREATING A DISEASE MEDIATED BY DECREASED MMP-2  
FUNCTION  
METHODES DE DIAGNOSTIC ET DE TRAITEMENT D'UNE MALADIE MEDIEE PAR UNE  
FONCTION DIMINUEE DE MMP-2

16/TI/10 (Item 10 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

METHODS OF DIAGNOSIS OF OVARIAN CANCER, COMPOSITIONS AND METHODS OF  
SCREENING FOR MODULATORS OF OVARIAN CANCER  
PROCEDES DE DIAGNOSTIC DU CANCER OVARIEN, COMPOSITIONS ET PROCEDES DE  
CRIBLAGE DE MODULATEURS DU CANCER OVARIEN

16/TI/11 (Item 11 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

A MAP OF A PROPERTY  
CARTE D'UNE PROPRIETE

16/TI/13 (Item 13 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

METHODS AND COMPOSITIONS FOR ARTICULAR RESURFACING  
METHODES ET COMPOSITIONS D'ARTHROPLASTIE

16/TI/14 (Item 14 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

COMPOSITE SCAFFOLDS AND METHODS USING SAME FOR GENERATING COMPLEX TISSUE  
GRAFTS  
SQUELETTES COMPOSITES ET PROCEDES D'UTILISATION ASSOCIES POUR GENERER DES  
GREFFES DE TISSUS COMPLEXES

16/TI/15 (Item 15 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

METHODS FOR ANALYSIS OF SPECTRAL DATA AND THEIR APPLICATIONS:  
OSTEOARTHRITIS  
PROCEDES D'ANALYSES DE DONNEES SPECTRALES ET LEURS APPLICATIONS: L'ARTHROSE

16/TI/16 (Item 16 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

METHOD FOR IMAGING AND SPECTROSCOPY OF TUMORS AND DETERMINATION OF THE  
EFFICACY OF ANTI-TUMOR DRUG THERAPIES  
PROCEDE D'IMAGERIE ET DE SPECTROSCOPIE DE TUMEURS ET DETERMINATION DE  
L'EFFICACITE DE THERAPIES MEDICALES CONTRE LES TUMEURS

16/TI/17 (Item 17 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

NOVEL FUNCTIONAL AGENTS FOR MAGNETIC RESONANCE IMAGING  
NOUVEAUX AGENTS FONCTIONNELS POUR IMAGERIE PAR RESONANCE MAGNETIQUE

16/TI/19 (Item 19 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

DEVICES FOR CREATING COLLATERAL CHANNELS  
DISPOSITIFS DE CREATION DE CANAUX COLLATERAUX



16/TI/20 (Item 20 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

CHEMOKINE RECEPTORS AND DISEASE  
RECEPTEURS DE CHIMIOKINE ET MALADIES ASSOCIEES

16/TI/21 (Item 21 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

DEVICES FOR CREATING COLLATERAL CHANNELS  
DISPOSITIFS DE CREATION DE CANAUX COLLATERAUX

16/TI/22 (Item 22 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

DEVICES FOR CREATING COLLATERAL CHANNELS  
DISPOSITIFS SERVANT A CREER DES CANAUX COLLATERAUX

16/TI/23 (Item 23 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

APPARATUS FOR DETECTING AND TREATING TUMORS USING LOCALIZED IMPEDANCE  
MEASUREMENT  
APPAREIL POUR DETECTER ET TRAITER DES TUMEURS PAR UNE MESURE D'IMPEDANCE  
LOCALISEE

16/TI/24 (Item 24 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

METHODS OF DIAGNOSIS OF PROSTATE CANCER, COMPOSITIONS AND METHODS OF  
SCREENING FOR MODULATORS OF PROSTATE CANCER  
PROCEDES DE DIAGNOSTIC DU CANCER DE LA PROSTATE, COMPOSITIONS ET PROCEDES  
DE CRIBLAGE DE MODULATEURS DU CANCER DE LA PROSTATE

16/TI/27 (Item 27 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

METHODS OF MODULATING THE ACTIVITY OF MURA  
PROCEDES DE MODULATION DE L'ACTIVITE DE MURA

16/TI/28 (Item 28 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

DETERMINATION OF THE ULTRASTRUCTURE OF CONNECTIVE TISSUE BY AN INFRARED  
FIBER-OPTIC SPECTROSCOPIC PROBE  
DETERMINATION DE L'ULTRA-STRUCTURE DU TISSU CONJONCTIF AU MOYEN D'UNE SONDE  
SPECTROSCOPIQUE A FIBRE OPTIQUE INFRAROUGE

16/TI/29 (Item 29 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

SYSTEM AND METHOD FOR JOINT RESURFACE REPAIR

**SYSTEME ET PROCEDE SERVANT A REPARER LA SURFACE D'UNE ARTICULATION**

16/TI/30 (Item 30 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

**TISSUE BIOPSY AND TREATMENT APPARATUS AND METHOD**  
**BIOPSIE DES TISSUS, APPAREIL ET PROCEDE DE TRAITEMENT**

16/TI/31 (Item 31 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

**TISSUE BIOPSY AND TREATMENT APPARATUS AND METHOD**  
**APPAREIL ET PROCEDE DE BIOPSIE ET TRAITEMENT TISSULAIRE**

16/TI/32 (Item 32 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

**METHODS FOR THE DIAGNOSIS AND TREATMENT OF BREAST CANCER**  
**METHODES DE DIAGNOSTIC ET DE TRAITEMENT DU CANCER DU SEIN**

16/TI/33 (Item 33 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

**CORRECTION OF PHASEFRONT ABERRATIONS AND PULSE REVERBERATIONS IN MEDICAL**  
**ULTRASOUND IMAGING**  
**CORRECTION D'ABERRATIONS DE PLAN D'ONDES ET DE REVERBERATIONS D'IMPULSIONS**  
**DANS L'IMAGERIE MEDICALE ULTRASONIQUE**

16/TI/34 (Item 34 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

**METHODS AND DEVICES FOR CREATING COLLATERAL CHANNELS IN THE LUNGS**  
**PROCEDES ET DISPOSITIFS PERMETTANT DE CREER DES CANAUX COLLATERAUX DANS LES**  
**POUMONS**

16/TI/35 (Item 35 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

**REHABILITATION DEVICE**  
**DISPOSITIF DE REHABILITATION**

16/TI/36 (Item 36 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

**FLUID DELIVERY APPARATUS**  
**DISTRIBUTEUR DE FLUIDE**

16/TI/37 (Item 37 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

**FLUID JET SURGICAL INSTRUMENTS**  
**INSTRUMENTS CHIRURGICAUX A JET DE FLUIDE**

16/TI/38 (Item 38 from file: 349)  
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HUMAN TUMOR NECROSIS FACTOR RECEPTOR-LIKE GENES  
RECEPTEURS DU FACTEUR DE NECROSE TUMORALE HUMAIN RESSEMBLANT A DES GENES

16/TI/39 (Item 39 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

APPARATUS AND METHOD FOR TREATMENT OF TISSUE  
APPAREIL ET PROCEDE DESTINES AU TRAITEMENT DE TISSUS

16/TI/41 (Item 41 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

METHODS AND APPARATUS FOR FITTING HEARING DEVICE TIPS  
PROCEDES ET APPAREIL PERMETTANT D'AJUSTER LES EMBOUTS D'UN APPAREIL DE  
CORRECTION AUDITIVE

16/TI/42 (Item 42 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

MINIATURE IMPLANTED ORTHOPEDIC SENSORS  
MINI-DETECTEURS ORTHOPEDIQUES IMPLANTES

16/TI/44 (Item 44 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

SPHERICALLY-SHAPED BIOMEDICAL IC  
CIRCUIT INTEGRE BIOMEDICAL SPHERIQUE

16/TI/45 (Item 45 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

TRANSESOPHAGEAL MAGNETIC RESONANCE ANALYSIS METHOD AND APPARATUS  
PROCEDE D'ANALYSE PAR RESONANCE MAGNETIQUE ET APPAREIL CORRESPONDANT

16/TI/46 (Item 46 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

SYNTHETIC STRUCTURAL IMAGING AND VOLUME ESTIMATION OF BIOLOGICAL TISSUE  
ORGANS  
IMAGERIE STRUCTURALE SYNTHETIQUE ET ESTIMATION DE VOLUME D'ORGANES  
TISSULAIRES BIOLOGIQUES

16/TI/47 (Item 47 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

METHOD AND APPARATUS FOR GENERATING 3D MODELS FROM MEDICAL IMAGES  
PROCEDE POUR GENERER DES MODELES EN 3D A PARTIR D'IMAGES MEDICALES

16/TI/48 (Item 48 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

FIBER-OPTIC CONFOCAL IMAGING APPARATUS AND METHODS OF USE  
APPAREIL D'IMAGERIE CONFOCAL A FIBRES OPTIQUES ET SES PROCEDES  
D'UTILISATION

16/TI/49 (Item 49 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

SOLID-STATE MAGNETIC RESONANCE IMAGING  
APPLICATION DE L'IMAGERIE PAR RESONANCE MAGNETIQUE SUR UN COMPOSANT SOLIDE

16/TI/50 (Item 50 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

MULTIPLEX SENSOR AND METHOD OF USE  
DETECTEUR MULTIPLEX ET PROCEDE D'UTILISATION

16/TI/51 (Item 51 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

METHOD AND APPARATUS FOR HIGH PRECISION VARIABLE RATE MATERIAL REMOVAL AND  
MODIFICATION  
PROCEDE ET APPAREIL DE HAUTE PRECISION A DEBIT VARIABLE POUR L'ABLATION ET  
LA MODIFICATION DE MATIERES

16/TI/52 (Item 52 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

IMAGING DEVICE AND METHOD  
DISPOSITIF ET PROCEDE DE FORMATION D'IMAGES

16/TI/53 (Item 53 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

MAGNETIC FIELD DIGITIZER FOR STEREOTACTIC SURGERY  
NUMERISEUR DE CHAMP MAGNETIQUE DESTINE A ETRE UTILISE EN STEREOTAXIE

16/TI/54 (Item 54 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

SURGICAL KNOT PUSHER AND METHOD OF USE  
POUSSE-FIL CHIRURGICAL

16/TI/55 (Item 55 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

MENISCAL AUGMENTATION DEVICE  
DISPOSITIF D'AUGMENTATION MENISCALE

16/TI/56 (Item 56 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

IMAGING DEVICE AND METHOD  
PROCEDE ET DISPOSITIF D'IMAGERIE

16/TI/57 (Item 57 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.

METHOD AND SYSTEM FOR MAKING PROSTHETIC DEVICE  
PROCEDE ET SYSTEME DE FABRICATION DE DISPOSITIF PROTHETIQUE

16/TI/58 (Item 58 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.  
CHIMERIC NEOMORPHOGENESIS OF ORGANS BY CONTROLLED CELLULAR IMPLANTATION  
USING ARTIFICIAL MATRICES  
NEOMORPHOGENESE CHIMERIQUE D'ORGANES PAR IMPLANTATION CELLULAIRE CONTROLEE  
METTANT EN OEUVRE DES MATRICES ARTIFICIELLES

16/TI/59 (Item 59 from file: 349)  
DIALOG(R)File 349:(c) 2003 WIPO/Univentio. All rts. reserv.  
NON-INVASIVE DETERMINATION OF MECHANICAL CHARACTERISTICS IN THE BODY

Set	Items	Description
S1	9133	CARTILAG?
S2	150665	3D OR (THREE OR 3) ( ) (D OR DIMENSION?) OR 3DIMENSION? OR TH- REED
S3	107259	IMAGING OR MRI OR MAGNETIC() RESONANCE? OR M()R()I OR CT(2N- )SCAN???? OR COMPUTED() TOMOGRA? OR MR
S4	1248733	VOLUM? OR SIZE? OR SHAPE? OR AREA? OR REGION? OR AMOUNT? OR QUANTIT?
S5	861459	COMPAR? OR CORRELAT? OR CONTRAST? OR MEASUR? OR QUANTIF?
S6	981684	INTERVAL? OR TIME? ? OR DAYS OR WEEKS OR MONTHS OR YEARS OR PERIODS
S7	1315	S1 AND S2 AND S3 AND S4 AND S5 AND S6
S8	87	S7 AND IC=A61B
S9	191600	S4(5N)S5
S10	937	S9 AND S1 AND S2 AND S3 AND S6
S11	60	S10 AND IC=A61B
S12	877	S10 NOT S11
S13	417	S12 NOT IC=(C12Q OR C07K)
S14	60	S11
S15	60	IDPAT (sorted in duplicate/non-duplicate order)
S16	59	IDPAT (primary/non-duplicate records only)

? show files

File 348:EUROPEAN PATENTS 1978-2003/Mar W03

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File 349:PCT FULLTEXT 1979-2002/UB=20030320,UT=20030313

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